Initially, Applicants acknowledge with appreciation the Examiner allowance of claims 6, 8-14, 17-22, 24-27, 29 and 47-50. Applicants also acknowledge with appreciation the courtesies extended by the Examiner during the Examiner's Interview of October 10, 2002.

Claims 1-14, 17-27, and 29-54 pending in the instant amendment. Claims 1-5, 7, 23, 30-46 and 51-54 remain rejected in the instant application.

With regard to the Examiner's rejection of claims 4 and 6-46, under 35 U.S.C. 112 (first paragraph), as failing to describe in the specification the subject matter of the claims to a sufficient degree to establish to one of skill in the art the inventor had possession of the claimed invention, this rejection is traversed for the reasons advanced in detail during the interview and below.

The Examiner continues to contend that the phrases "alternating voltage" in claims 34 and 36 and "an AC voltage having an amplitude equivalent to that ... opposite electrode" in patent claims 7 and 23 find no support in the patent specification. However, a review of the voltage depicted in Figures 10A-10C and discussed at column 4, lines 37-52 illustrates these features. That is, with respect to claims 7 and 23, it is taught that a voltage having the same amplitude as output of the digital memory circuit and a desired frequency such as a vertical synchronizing frequency is applied to <u>an opposite electrode</u>, such that the voltage applied to the liquid crystal is approximately zero on a time average basis. This means, to one of ordinary skill in the art, that the voltage applied to the opposite electrode is an AC voltage. Also, with respect to claims 34 and 36, it is taught that the voltage having the same amplitude as output of the digital memory circuit and a desired <u>frequency</u> such as a vertical synchronizing <u>frequency</u> can be used <u>as the power source voltage of the digital memory circuit</u>. This also means to one of ordinary skill in the art that the power source voltage of the memory circuit is an AC voltage, since a DC voltage does not have frequency.

As discussed during the interview, this interpretation is also clearly supported by the Japanese priority application which discloses alternating current. A partial translation of this disclosure is provided (Exhibit A) for the Examiner's consideration in which the claims recite that the opposite electrode is "A.C. driven" therein. Further, Applicant provides herein definitions available to one of skill in the art to further support the above assertions. Specifically, Applicant provides a definition of "frequency" from a text book, *Electrical Power*

Motors, Controls, Generators, Transformers by Joe Kaiser (Exhibit B) wherein this term is defined as the number of times **alternating current** changes direction during a second in electricity (emphasis added). Since the specification expressly provides that the voltage has a "desired frequency such as vertical synchronizing frequency" being applied to the opposite electrode, this disclosure clearly supports the recitation of alternating current in the claims.

Further, the Examiner indicated during the interview that the above arguments may be sufficient to overcome the Section 112 rejection, but also questioned the possibility of pulsed DC voltage during the interview. To address this concern, Applicant provides a definition of "direct current" from *The New IEEE Standard Dictionary of Electrical and Electronics Terms* (Exhibit C) wherein "direct current" is defined as unidirectional current denoting nonpulsating current (emphasis added).

The specification at col. 4, lines 37-52 is also clearly providing an alternative to direct current voltage since the express language states at lines 37-40 that the use of direct current voltage applied to a liquid crystal element for a long period of time deteriorates the liquid crystal. This alternative is alternating current voltage for the reasons noted above. Otherwise, this portion of the specification where DC voltage is criticized would not make sense.

Consequently, for the reasons advanced in detail above and during the interview, Applicant respectfully requests that this rejection be reconsidered and withdrawn and that claims 7, 23, 34-36, 45 and 52-54 be considered allowable.

With regard to the rejection of claims 1-5 under 35 USC 103(a), as being obvious in view of the combination of Parks ('225) and Johary et al ('839), the Examiner is contending that Parks discloses a liquid crystal display device comprising first and second substrates, at least one memory circuit connected to a thin film transistor and a pixel electrode. Parks does not disclose the "time degradation device" Johary et al. is relied upon to teach a time degradation device.

With regard to claims 1-5, the Johary et al ('839) reference which appears to teach (column 1, lines 23-47; Figures 1A-D) that time gradation display techniques can be used in a display device, also teaches (column 1, lines 48-57; column 3, lines 53-68; column 4, lines 1-20) these display devices do not have the same structure as that of the present invention or Parks. Therefore, one of ordinary skill in the art is provided with no suggestion or motivation to combine the features of Johary et al ('839) with the LCD devices of Parks ('225). Additionally, the Examiner's statement that "it would have been obvious to one of ordinary skill in the art to

use Johary's generation means in the Parks' invention so that gradation images can be generated in the Park's display device" does not remedy the failure of either Johary et al ('839) or Parks to reach the presently claimed invention, since such a statement points to no suggestion or motivation in the references themselves to utilize a time gradation display technique in the display device of Parks. As a consequence and for these reasons set forth above, the rejection of claims 1-11 and 18-26, under 35 USC 103(a), as being obvious in view of the combination of Parks ('225) and Johary et al ('839) is believed to be improper and should be withdrawn.

Claims 30-46 are rejected under 35 U.S.C. 103(a) over Parks in view of Runaldue et al. Runaldue et al. is relied upon for teaching the use of a memory cell including a pair of inverters each having a p-channel type TFT and an n-channel type TFT. The patent, however, is directed to a dual port static random access memory which is designed to optimize a color lookup table application. The Examiner recognizes that the use of the memory cell in Runaldue et al. is different from the use in Parks, but continues to believe there would be motivation to combine the teachings of these references, since Runaldue et al. is merely cited to show another form of memory cell. Applicant respectfully contends that such use of Runaldue et al. amounts to impermissible hindsight reconstruction where only a portion of a reference is used to support the obviousness rejection based only on Applicant's disclosure. Such a basis for obviousness is not appropriate, since the motivation to combine the references must be found in the references themselves.

The courts have repeatedly held that references combined under 35 U.S.C. §103 must include some suggestion or motivation to combine them. Specifically, the "[m]ere fact that the prior art may be modified to produce the claimed invention does not make modification obvious unless prior art suggested the desirability of modification." *In re Fritch*, 23 U.S.P.Q.2d 1780 (Fed.Cir.1992). Since the memory cell in Runaldue et al. is used for a different application, there is nothing in either reference to suggest to swap the memory cell of Parks with the memory cell of Runaldue et al. To hold otherwise would entirely ignore the requirement of motivation to combine references in an obviousness rejection under Section 103. As a result, the rejection of claims 30-46 and 51-54 over Parks in view of Runaldue et al. should be reconsidered and withdrawn.

For the reasons set forth above, claims 1-14, 16-27, 29-51 are believed to be in condition for allowance. However, applicant's representative would like to have an interview with the

Examiner at the earliest convenience in order to discuss the above amendments and any other issue that in the Examiner's opinion may remain unresolved. The Examiner is invited to contact the undersigned by telephone in order that the further prosecution of this application can thereby be expedited.

Lastly, it is noted that a separate Petition for Extension of Time (one month) accompanies this response along with a check in payment of the requisite extension of time fee. However, should that petition become separated from this Amendment, then this Amendment should be construed as containing such a petition. Likewise, any overage or shortage in the required payment should be applied to Deposit Account No. 19-2380 (740756-2204).

Respectfully submitted,

Jeffrey L. Costellia
Registration No. 35,483

NIXON PEABODY LLP
8180 Greensboro Drive, Suite 800
McLean, Virginia 22102
(703) 770-9300
(703) 770-9400 (FAX)

JLC/

Exhibit A

Partial English Translation of Japanese Patent Application No. 05-354091

[Claim 1] A liquid crystal display device of a time gradation method, comprising pixel electrodes arranged in a matrix form, signal lines and scanning lines over a first substrate having an insulating surface; an opposite electrode over a second substrate having an insulating surface; and a liquid crystal between the first and second substrates, characterized in that, one pixel electrode is provided with one digital memory circuit which is constituted with thin film transistors and has an output connected to the pixel electrode, and said opposite electrode is A.C. driven with a same amplitude as an output logic amplitude of said digital memory circuit.

Partial English Translation of Japanese Patent Application No. 05-354092

[Claim 1] A liquid crystal display device of a time gradation method, comprising pixel electrodes arranged in a matrix form, signal lines and scanning lines over a first substrate having an insulating surface; an opposite electrode over a second substrate having an insulating surface; a liquid crystal between the first and second substrates, characterized in that one pixel electrode is provided with one digital memory circuit which is constituted with thin film transistors and has an output connected to the pixel electrode, and a power source voltage of said digital memory circuit is A.C. driven with a same amplitude as an output logic amplitude of it.

Exhibit B

Electrical Power

Motors, Controls, Generators, Transformers

by

Joe Kaiser
B.S., Electrical Engineering, University of Kentucky
Adjunct Professor at American International College

Publisher
The Goodheart-Willcox Company, Inc.
Tinley Park, Illinois

Library of Congress Catalog Card Number 97-8120
International Standard Book Number 1-56637-366-2

2 3 4 5 6 7 8 9 98 01 00 99 98

Library of Congress Cataloging-in-Publication Data

Kaiser, Joe.
Electrical power: motors, controls, generators, transformers / by Joe Kaiser.

p. cm.
Includes index.
ISBN 1-56637-366-2
1. Electric machinery. I. Title.
TK2000.K33 1997
621.31'042--dc21 97-8120
CIP

Cover photograph courtesy of Electrical Apparatus Service Association, Inc. St. Louis, MO. Reprinted with permission.

ELECTROMOTIVE FORCE: Voltage or force that causes free electrons to move in a conductor. Unit of measure is the volt (V).

ELECTRON: A negative electric charge.

ELECTRON FLOW: Movement of electrons from a negative point to a positive point in a conductor such as a metal wire. Electrons may also move through liquids, gases, or vacuum.

ELECTRON THEORY: Belief that all matter is made up of atoms. Atoms have a nucleus of positively charged particles called protons and neutral particles called neutrons. Negatively charged particles called electrons orbit around the nucleus.

ELECTROSTATIC CHARGE: The electrical charge stored by a capacitor.

ELECTROSTATIC FIELD: Stored electrical charges on the surface of an insulator.

EXCITATION: Creating a magnetic field; used to create electromagnetics by passing an electric current through a coil.

EXCITATION CURRENT: The current in the shunt field of a motor that results when voltage is applied across the field.

FACEPLATE CONTROLLER: Motor starter having a wiper arm and several taps that are contacted by the wiper arm that is manually controlled.

FARAD: Unit of capacitance. A capacitor is said to have a capacity of 1 farad when a current of one ampere is produced by a rate of change of 1 volt per second. Or: One coulomb per volt.

FARADAY, MICHAEL: English physicist and chemist. He invented first electric generator, formulated the laws of magnetic induction and plane of rotation of polarized light in a magnetic field. Unit of electrical capacity (farad) was named for him.

FIELD ACCELERATING RELAY: A relay that weakens field strength in a motor to increase speed after it has started with full strength field.

FIELD DECELERATING RELAY: Relay used to slow down an electric motor. It is pulled into operation by armature current. It creates resistance in the motor circuit. This resistance slows the motor.

FIELD INTENSITY: The amount of magnetizing force available to produce flux (lines of force) in the core of a magnet. Its SI metric units are amperes per metro.

FIELD LOSS RELAY: Also called a motor field failure relay. A relay that acts to disconnect the motor armature from the line in case field excitation is lost.

555 TIMER: Popular integrated circuit that can be used as a timer and as a pulse generator.

FLASHING THE FIELD: Method of producing residual magnetism in the pole pieces of a dc generator. It is done by applying full voltage to the field coil from a separate source for 30 seconds.

FLAT COMPOUNDED GENERATOR: Compound wound generator with series field winding adjusted so that output voltage is nearly constant for currents between no-load and full-load.

FLUX DENSITY: The number of lines of flux in a cross-sectional area of a magnetic circuit.

FLUX LINKAGE: The magnetic lines of force linking a coil of wire. Whenever the linkage changes, voltage is induced in the coil.

FREE ELECTRONS: Electrons that move from one atom of a substance to another without becoming strongly attached to any particular atom.

FREQUENCY: In electricity, the number of times alternating current changes direction during a second. Frequency is measured in hertz (cycles per second).

GATE: One of the leads on a thyristor. Usually, this lead is the one that controls output when it is properly biased.

GALVANOMETER: Meter that can measure small currents and voltages.

GENERATOR: Rotating machine that changes mechanical energy into direct current electrical energy.

GENERATOR ACTION: Inducing of voltage into a wire that is cutting a magnetic field.

HARD NEUTRAL POSITION: Describing a position of repulsion motor brushes in which the

Exhibit C

IEEE Std 100-1992

The New IEEE Standard Dictionary of Electrical and Electronics Terms
[Including Abstracts of All Current IEEE Standards]

Fifth Edition

Gediminas P. Kurpis, Chair

Christopher J. Booth, Editor

The Institute of Electrical and Electronics Engineers, Inc.
345 East 47th Street, New York, NY 10017-2394, USA

ISBN 1-55937-240-0

SH15594

January 15, 1993

den short-circuit test at the terminals of the machine at rated voltage, no load. *See:* **direct-axis synchronous reactance.** *See:* **direct-axis synchronous impedance (rotating machinery).** [9]

direct-axis transient short-circuit time constant. The time in seconds required for the root-mean-square value of the slowly decreasing component present in the direct-axis component of the alternating-current component of the armature current under suddenly applied symmetrical short-circuit conditions with the machine running at rated speed, to decrease to $1/e \approx 0.368$ of its initial value.

direct-axis transient voltage (rotating machinery). The direct-axis component of the armature voltage that appears immediately after the sudden opening of the external circuit when running at a specified load, the components that decay very fast during the first few cycles, if any, being neglected. *See:* **direct-axis synchronous reactance.** [9]

direct-axis voltage (rotating machinery). The component of voltage that would produce direct-axis current when resistance-limited. *See:* **direct-axis synchronous reactance.** [9]

direct-buried transformer (power and distribution transformer). A transformer designed to be buried in the earth with connecting cables. C57.12.80-1978

direct capacitances (system of conductors). The direct capacitances of a system of n conductors such as that considered in coefficients of capacitance (system of conductors) are the coefficients in the array of linear equations that express the charges on the conductors in terms of their differences in potential, instead of potentials relative to ground.

$$\mathcal{Q}_1 = O + C_{12}(V_1 - V_2) + C_{13}(V_1 - V_3) + \dots + C_{1(n-1)}(V_1 - V_{n-1}) + C_{10}V_1$$

$$\mathcal{Q}_2 = C_{21}(V_2 - V_1) + O + C_{23}(V_2 - V_3) + \dots + C_{2(n-1)}(V_2 - V_{n-1}) + C_{20}V_2$$

$$\mathcal{Q}_{n-1} = C_{(n-1)1}(V_{n-1} - V_1) + C_{(n-1)2}(V_{n-1} - V_2) + \dots + O + C_{(n-1)0}V_{n-1}$$

with $C_{rp} = C_{rp}$ and C_{re} not involved but defined as zero. *Note:* The coefficients of capacitance c are related to the direct capacitances C as follows

$c_{rp} = -C_{rp}$, for $r \neq p$

and

$$c_{rr} = \sum_{p=1}^{p=n} C_{rp}$$

direct chaining. *See:* **separate chaining.** 610.5-1990

direct commutation (circuit properties) (self-commutated converters). A commutation between two principal switching branches without the involvement of other switching branches. In converters using devices such as power transistors or gate turn-off thyristors, this is accomplished by turning off the switch in the outgoing branch and turning on the switch in the incoming branch. In converters using circuit-commutated thyristors, commutating capacitors coupled to the switching branches turn off the outgoing switch when the incoming switch is turned on. 936-1987

direct component (illuminating engineering). That portion of the light from a luminaire which arrives at the work-plane without being reflected by room surfaces. [126]

direct-connected exciter (rotating machinery). An exciter mounted on or coupled to the main machine shaft so that both machines operate at the same speed. *See:* **asynchronous machine.** [9]

direct-connected system. *See:* **headquarters system.**

direct coupled (electrical heating applications to melting furnaces and forehearths in the glass industry). The power modulation device is conductively connected directly to the electrodes carrying current into the molten glass. 668-1987

direct-coupled amplifier (signal-transmission system). A direct-current amplifier in which all signal connections between active channels are conductive. *See:* **signal.** [43]

direct-coupled attenuation (transmit-receive, pretransmit-receive, and attenuator tubes). The insertion loss measured with the resonant gaps, or their functional equivalent, short-circuited. 160-1957w

direct coupling. The association of two or more circuits by means of self-inductance, capacitance, resistance, or a combination of these that is common to the circuits. 81-1983

direct current (dc) (1) (electric installations on shipboard). A unidirectional current in which the changes in value are either zero or so small that they may be neglected. (As ordinarily used, the term designates a practically nonpulsating current.) 45-1983
(2) (power cable systems). Unidirectional current; as used in this guide, the term denotes a practically nonpulsating current. 400-1980

•**direct current (dc) (1).** Unidirectional current; as used in IEEE Std 400-1991, the term denotes a practically nonpulsating current. 400-1991
(2). The time average value of the current in the dc link. 995-1987